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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,360	03/18/2005	Haruo Sugiyama	0020-5357PUS1	5008

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EXAMINER	
NIEBAUER, RONALD T	
ART UNIT	PAPER NUMBER
1609	

NOTIFICATION DATE	DELIVERY MODE
06/04/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/528,360	SUGIYAMA ET AL.	
	Examiner	Art Unit	
	Ronald T. Niebauer	1609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *3,5-13,16-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2, 4, 14-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/8/06, 2/28/06, 1/3/06, 7/25/06, 3/18/06.

DETAILED ACTION

Election/Restrictions

Applicant's election of Group I (claims 1-4, 14-15) and the species of SEQ ID NO:8 in the reply filed on 3/19/07 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The restriction requirement (page 5) stated:

> 'The reply must also identify the claims readable on the elected species, including any claims subsequently added.'

Applicant has not identified the claims readable on the elected species. Claims 1,2,4,14 and 15 read on the elected species (SEQ ID NO:8).

Claims 3,5-13,16-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention/species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3/19/07.

The elected species was found to be free of the prior art. Section 803.02 of the MPEP states proper practice with Markush-type claims:

> ...should the examiner determine that the elected species is allowable, the examination of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a nonelected species, the Markush-type claim shall be rejected and claims to the nonelected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all nonelected species.

Claim Objections

Claim 4 is objected to because of the following informalities: it depends on a non-elected claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1,4 and dependent claims 2,14-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is drawn to a peptide which comprises an amino acid sequence of a particular formula (SEQ ID NO:4). The claim could be interpreted to be any full-length sequence comprising SEQ ID NO:4 or any portion of SEQ ID NO:4 (due to the open language of 'an amino acid sequence'). For example, Thr-Trp-Asn-Gln-Met-Asn-Leu could be interpreted to comprise an amino acid sequence of SEQ ID NO:4. For purposes of this examination, claim 1 has been interpreted broadly to include any portion of SEQ ID NO:4. Since claim 2 recites 'the amino acid sequences' (as opposed to 'an amino acid sequence' for claim 1) for purposes of this examination claim 2 has been interpreted to include amino acids comprising the full length sequence of SEQ ID NO:4 with or without amino acid residues at either end, but has not been interpreted to include any portion of the sequence. Similarly claim 4 has been interpreted to include amino acids consisting of the full length sequence of SEQ ID NO:4, but has not been interpreted to include any portion of the sequence. Since claim 14 and 15 depend from claim 1

and do not recite any additional amino acid sequences they have been interpreted broadly to include any portion of SEQ ID NO:4.

Claim 1 refers to the term CTL but this abbreviation is not clearly explained in the claim or specification. For purposes of this examination CTL has been interpreted to be cytotoxic T cell.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 14-15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a pharmaceutical composition for inducing CTLs, does not reasonably provide enablement for prevention of cancer. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

> The factors to be considered in determining whether a disclosure meets the enablement requirements of 35 U.S.C. 112, first paragraph, have been described in *In re Wands*, 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir., 1988). The court in Wands states, "Enablement is not precluded by the necessity for some experimentation, such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue', not 'experimentation'" (*Wands*, 8 USPQ2sd 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations" (*Wands*, 8 USPQ2d 1404). Among these factors are: (1) the nature of the invention; (2) the breadth of the claims; (3) the state of the prior art; (4) the predictability or unpredictability of the art; (5) the relative skill of those in the art; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

While all of these factors are considered, a sufficient amount for a *prima facie* case is discussed below.

(1) The nature of the invention and (2) the breadth of the claims:

The claims are drawn to a pharmaceutical composition (claim 14) and specifically a composition used as a cancer vaccine (claim 15). Since it is a pharmaceutical composition the intended use would be for some type of treatment in patients. In the specification a wide range of cancers are listed (page 33-37) and it is stated that the treatment/prevention of cancer is achieved with this composition. Further, the composition claimed could be a variety of peptides. For example SEQ ID NO:4 includes variable X which could be 10 different amino acids.

(3) The state of the prior art and (4) the predictability or unpredictability of the art:

The state of the art in treating/preventing cancer is unpredictable. It is well known that it is difficult to translate results to living systems.

As stated by Zips et al. (2005, page 3 column 2):

"It is obvious that cells in culture represent an artificial and simplified system. Unlike the situation *in vitro*, a tumor is a 3-dimensional complex consisting of interacting malignant and non-malignant cells. Vascularisation, perfusion and, thereby drug access to the tumor cells are not evenly distributed and this fact 'consists' an important source of heterogeneity in tumor response to drugs that does not exist *in vitro*. Therefore, prediction of drug effects in cancer patients based solely on *in vitro* data is not reliable and further evaluation in animal tumor systems is essential."

Further, as stated by Dr. Richard Klausner (Time, 1998 page 2 of document), "We have cured mice of cancer for decades – and it simply didn't work in people".

Since the models systems are highly unpredictable for treating cancer and determining effective compounds remains largely unsolved, means for treating, curing, or preventing cancer and preparing an 'effective amount' (dose) of the compositions for treating, curing, or preventing cancer is highly unpredictable.

(5) The relative skill of those in the art:

The relative skill of those in the art is high.

(6) The amount of direction or guidance presented and (7) the presence or absence of working examples:

Examples (such as example 4) are provided in which compositions are tested for the ability to induce CTLs. The specification has provided guidance for administration of a vaccine (page 38). However, the specification does not provide a correlation between the ability to induce CTLs and the intended use of cancer treatment. Specifically, one of skill in the art would not accept that induction of CTLs is the equivalent of the prevention of cancer. Further, examples using the variety of peptides described has not been provided nor have examples been provided for patients with the variety of cancers described. As applicant states on page 1, peptides in which substitutions have occurred may provide largely different efficacy. Please note that the term "prevent" is an absolute definition which means to stop from occurring and, thus, requires a higher standard for enablement than does "therapeutic" or "treat".

(8) The quantity of experimentation necessary:

Experimentation is required in numerous areas particularly related to how to use the composition and determination if it would be a useful composition for cancer prevention. It is also unknown how much of an effect (other than induction of CTLs), if any, the pharmaceutical composition would have on disease states especially complex disease states such as cancer. Considering the state of the art as discussed by the references above, particularly with regards to the high unpredictability in the art as evidenced therein, and the lack of guidance provided in the

specification, one of ordinary skill in the art would be burdened with undue experimentation to practice the invention commensurate in the scope of the claims.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The broad language and interpretation of the claim is such that the natural WT1 protein that the peptide has been derived from reads on the claim. Hence it is possible that the peptide is naturally occurring and has not been isolated or removed from a naturally occurring environment. The claimed subject matter therefore reads on a product of nature.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1,14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Gaiger (WO 00/18795 as cited in IDS filed 3/18/05).

Claim 1 is drawn to a peptide that has an activity to induce CTLs. Claim 14 is drawn to a pharmaceutical composition comprising the peptide. Claim 15 is drawn to a pharmaceutical composition comprising the peptide for use as cancer vaccine.

Gaiger (WO 00/18795) teaches a peptide (page 14 line 21 and claim 5) of sequence Cys-Met-Thr-Trp-Asn-Gln-Met-Asn-Leu. It is known in the art (Makita et al. as disclosed in IDS, also page 2 of applicants specification) that this peptide induces CTLs. This sequence meets the limitations of claim 1 since it comprises an amino acid sequence of SEQ ID NO:4 (see 112 2nd paragraph above). Specifically, the sequence of Gaiger comprises a portion of SEQ ID NO:4 with an additional amino acid on the N-terminus.

Gaiger teaches (claim 11) a pharmaceutical composition comprising a polypeptide with a pharmaceutically acceptable carrier, and a vaccine comprising a polypeptide (claim 15) in which the composition is a cancer vaccine (page 4 1st two paragraphs, specifically line 9). Therefore claim 1,14 and 15 are anticipated by Gaiger.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaiger.

Claim 2 is drawn to a peptide comprising a particular sequence that has an activity to induce CTLs. Claim 4 is drawn to a peptide consisting of a particular sequence that has an activity to induce CTLs.

Gaiger teaches a peptide that is identical to the peptide of SEQ ID NO:15 except that the first residue is Cys instead of Ser. Gaiger further describes a peptide variant (page 15 line 20 and claim 5) in which a conservative mutation can be made from Cys to Ser (page 16 line 25) which describes a peptide that is identical to the peptide described in claim 1/2 and 4.

Gaiger does not expressly teach SEQ ID NO:15, but one would be motivated to envisage this peptide based on the generic description of variant and the limited number of conservative mutations described (page 15-16 of specification). Section 2131.02 of the MPEP states:

> When the compound is not specifically named, but instead it is necessary to select portions of teachings within a reference and combine them, e.g., select various substituents from a list of alternatives given for placement at specific sites on a generic chemical formula to arrive at a specific composition, anticipation can only be found if the classes of substituents are sufficiently limited or well delineated. Ex parte A, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990). If one of ordinary skill in the art is able to "at once envisage" the specific compound within the generic chemical formula, the compound is anticipated.

With regard to the peptide having activity to induce CTLs, it is known in the art (Makita et al. as disclosed in IDS, also page 2 of applicants specification) that the peptide Cys-Met-Thr-Trp-Asn-Gln-Met-Asn-Leu induces CTLs. For the peptide of SEQ ID NO:15, the core sequence remains the same for the variant sequence with the only modification being Cys to Ser at position 1. One of skill in the art would have an expectation for success based on this conservative mutation. Further, if a peptide is taught in the art any particular property/function of that peptide does not render the peptide patentably new. Section 2105 of the MPEP states:

> [T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition

patentably new to the discoverer."

Taken together, it would have been obvious to one of skill in the art to make the invention of the current application.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill in the art might reasonably infer from the teachings. (*In re Opprecht* 12 USPQ 2d 1235, 1236 (Fed Cir. 1989); *In re Bode* 193 USPQ 12 (CCPA) 1976). In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a). From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 8 of copending Application No. 11322245 (1/3/06 claims, see SEQ ID NO:7); claim 98 of copending Application No. 09744815 (8/1/05 claims, see SEQ ID NO:7); claims 43/48 of copending Application No. 10562486 (12/27/05 claims, see SEQ ID NO:2); claim 30 of copending Application No. 10471835 (1/8/07 claims, see SEQ ID NO:3).

Claim 14 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 11 of copending Application No. 11322245 (1/3/06 claims, see SEQ ID NO:7); claim 104 of copending Application No. 09744815 (8/1/05 claims, see SEQ ID NO:7); claim 45 of copending Application No. 10562486 (12/27/05 claims, see SEQ ID NO:2); claim 33 of copending Application No. 10471835 (1/8/07 claims, see SEQ ID NO:3).

Claim 15 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 106 of copending Application No. 09744815 (8/1/05 claims, see SEQ ID NO:7); claim 33 of copending Application No. 10471835 (1/8/07 claims, see SEQ ID NO:3).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the broad wording and interpretation of claim 1 of the present application reads on the SEQ IDs listed above and compositions and vaccines thereof.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald T. Niebauer whose telephone number is 571-270-3059. The examiner can normally be reached on Monday-Thursday, 7:30am-5:00pm, alt. Friday, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mary Mosher can be reached on 571-272-0906. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

rtn

MARY MOSHER
SUPERVISORY PATENT EXAMINER